



Estimating the health effects of greenhouse gas mitigation strategies: Addressing parametric, model, and valuation challenges

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Abstract:

Background: Policy decisions regarding climate change mitigation are increasingly incorporating the beneficial and adverse health impacts of greenhouse gas emission reduction strategies. Studies of such co-benefits and co-harms involve modeling approaches requiring a range of analytic decisions that affect the model output. **Objective:** Our objective was to assess analytic decisions regarding model framework, structure, choice of parameters, and handling of uncertainty when modeling health co-benefits, and to make recommendations for improvements that could increase policy uptake. **Methods:** We describe the assumptions and analytic decisions underlying models of mitigation co-benefits, examining their effects on modeling outputs, and consider tools for quantifying uncertainty. **Discussion:** There is considerable variation in approaches to valuation metrics, discounting methods, uncertainty characterization and propagation, and assessment of low-probability/high-impact events. There is also variable inclusion of adverse impacts of mitigation policies, and limited extension of modeling domains to include implementation considerations. Going forward, co-benefits modeling efforts should be carried out in collaboration with policy makers; these efforts should include the full range of positive and negative impacts and critical uncertainties, as well as a range of discount rates, and should explicitly characterize uncertainty. We make recommendations to improve the rigor and consistency of modeling of health co-benefits. **Conclusion:** Modeling health co-benefits requires systematic consideration of the suitability of model assumptions, of what should be included and excluded from the model framework, and how uncertainty should be treated. Increased attention to these and other analytic decisions has the potential to increase the policy relevance and application of co-benefits modeling studies, potentially helping policy makers to maximize mitigation potential while simultaneously improving health.

Source: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4014758>

Resource Description

Communication:

resource focus on research or methods on how to communicate or frame issues on climate change; surveys of attitudes, knowledge, beliefs about climate change

A focus of content

Communication Audience:

audience to whom the resource is directed

Climate Change and Human Health Literature Portal

Policymaker, Researcher

Exposure :

weather or climate related pathway by which climate change affects health

Air Pollution, Food/Water Quality, Food/Water Security, Food/Water Security, Indoor Environment, Unspecified Exposure

Air Pollution: Ozone, Particulate Matter, Other Air Pollution

Air Pollution (other): NOx; VOCs

Food/Water Quality: Chemical

Food/Water Security: Agricultural Productivity, Food Access/Distribution, Nutritional Quality

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Global or Unspecified

Health Co-Benefit/Co-Harm (Adaption/Mitigation):

specification of beneficial or harmful impacts to health resulting from efforts to reduce or cope with greenhouse gases

A focus of content

Health Impact:

specification of health effect or disease related to climate change exposure

Cancer, Cardiovascular Effect, Developmental Effect, Diabetes/Obesity, Injury, Mental Health/Stress, Morbidity/Mortality, Neurological Effect, Respiratory Effect

Cardiovascular Effect: Heart Attack

Developmental Effect: Cognitive/Neurological

Mental Health Effect/Stress: Mood Disorder

Respiratory Effect: Asthma

Intervention:

strategy to prepare for or reduce the impact of climate change on health

A focus of content

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

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Mitigation

Model/Methodology:

type of model used or methodology development is a focus of resource

Methodology, Outcome Change Prediction

Resource Type:

format or standard characteristic of resource

Research Article, Review

Timescale:

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment:

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content